

Developmental Effect of the Rising Debt Level in Nigeria

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ABSTRACT

Background: Nigerian economy is bedeviled by dwindling economy, low per capita income, poor infrastructural development, high unemployment rates, inadequate basic amenities, falling growth rates of GDP and recently, rated the poverty headquarters of the world which calls for empirical investigation as a way forward to resuscitate the economy.

Aim: The study investigated the effect of debt level on the economic development of Nigeria from 1999 to 2021.

Materials and Methods: Two research questions were developed to guide the study. Also, two hypotheses were formulated for the study. Ex-post-facto research design was adopted. The study used time series data to analyse public debt level trends in Nigeria compared to GDP growth rate over twenty-three (23) years, spanning from the year 1999 to 2021. Ordinary least square regression, unit root test, and Johansen co-integration test were used to analyse the data collected from Central Bank of Nigeria Statistical Bulletin.

Results: The results of the study showed that domestic debt level significantly and positively affects the gross domestic product performance in Nigeria. Also, the study found that external debt level significantly and negatively influences the gross domestic product of Nigeria.

Conclusion: The study concludes that debt level (domestic and external) have significant effect on Nigerian gross domestic product.

Recommendation: It was recommended that: the government should resort to domestic debts up to sustainable debt levels that do not crowd out development and social programmes; to prevent issues with debt overhang, government borrowing from international markets should be utilized effectively and concessionary loans rather than commercial loans should be sought after.

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KEYWORDS: Internal Debt, External Debt, GDP, Economic Development

1. INTRODUCTION

Debt level when managed prudently helps economic performance, growth and stability through mobilizing resources with low borrowing cost and limiting financial risk exposure (Eke & Akujuobi, 2021). Over the years, studies on debt level and economic performance of nations have been characterized as a debatable issue between scholars. Developing nations such as Nigeria borrow domestically and externally to augment their limited capital base and to bridge the domestic savings-investment gap with the aim of facilitating economic performance and growth (Onyele & Nwadike, 2021; Nwamuo & Agu, 2021). Developmental strides are fast-tracked and the people's standard of living is increased when the

borrowed funds are productively ploughed back and correctly exploited for profitable investment (Opara, Nzotta & Kanu, 2021). Be that as it may, the economy of the nation is troubled by a difficult scenario orchestrated by the COVID-19 pandemic and falling crude oil prices. Thus, borrowing is imperative due to prevailing circumstances, especially with the advent of COVID-19 (Hoti, Shkurti & Rehman, 2022; Yang, Zhang, Wang, Deng & Guo, 2022). It is of course necessary that such borrowing is judiciously utilized to improve infrastructure and implement development plans that can grow the economy.

Nigeria, as a developing country, supplement its revenue through domestic and external debts. Policy analysts, citizens and many stakeholders are increasingly disturbed over the country's external debt compared with its national income. This is because of the fact that unsustainable debt levels are not only harmful but also crowds out development and social programmes since huge portions of government revenue are taken away from essential services and used instead to service debt (Mutunga, 2020). That aside, concerns have been raised on whether or not surge of public debt level negatively affects the future generations.

It is worthy of note that in Nigeria, the major proportion of external debt if not all are not used to finance infrastructural projects that can promote economic growth and development in the country. This explains the reason the country continually faces debt-servicing problems and also woefully failed to achieve growth and development targets. Meanwhile, Okoye and Nwoye (2021), Babalola (2021) and Nairametrics had, in 2021, revealed that the Federal Government spent N1.8 trillion on debt servicing in the first five months of the year, representing about 98 per cent of the total revenue generated in the same period. A total of N4.86 trillion was spent by the Federal Government between January and May 2021, from which N206.89 billion was spent as statutory transfers. While recurrent expenditure in the review period stood at N3.67 trillion, debt service was N1.8 trillion (Babalola, 2021). The implication of Nigeria's ever increasing debt service, however, is that the government is expending nearly all its revenue in servicing recurrent expenditure and debts, consequently causing the Federal Government to have recourse to foreign loans, and thereby further increasing the nation's external debt profile. Consequently, both the domestic and external debts of Nigeria are quite increasing more rapidly than the nation's capacity to repay. Apparently, the Nigerian debt crisis has persisted regardless the policy measures that have been put forward to control the debt level. The after-math of these are the ever-increasing level of unemployment, heightened inflation, capacity underutilization, and over dependence on the oil sector among others (Opara, Nzotta & Kanu, 2021).

Despite the continuous borrowing, the Nigerian economy is still bedeviled by dwindling economy, low per capita income (one of the lowest in the world), poor infrastructural development, high unemployment rates, inadequate basic amenities, falling growth rates of GDP and recently rated the poverty headquarters of the world. Worse still, poor

management of borrowed funds played a key role in dipping the nation's economy into an avoidable recession between 2016 to 2017. Ever since, the economy has not been stable, poverty levels increase rapidly and economic growth declines visibly.

Furthermore, the recent study carried out by Akanbi, Uwaleke and Ibrahim (2022) merely covered 1981 to 2020 fiscal years while that of Okerekeoti (2022). There is need to carry out a comprehensive study which covers 1999 to 2021 fiscal years and capturing domestic debts in the model. It is in response to this that the present study is carried out to address the gap in knowledge.

1.1. Objectives of the Study

The broad objective of the study is to determine the effect of debt level on the economic performance of Nigeria from 1999 to 2021. Specifically, the study is set to:

1. Investigate whether domestic debt level significantly affects gross domestic product performance in Nigeria.
2. Ascertain the extent to which external debt level influences gross domestic product of Nigeria.

2. Theoretical Constructs and Hypothesis Development

2.1. Domestic Debt Level and Economic development

Domestic debt level refers to total debt instrument issued by the federal government and denominated in local currency as money owed to its citizens and/or local financial organisations. Domestic debt level refers to debt instrument issued by the federal government and denominated in local currency (Opara, Nzotta & Kanu, 2021). It is the gross obligation of government property which should include federal, state, and local government transfer obligation to the citizen and corporate firms within the country (Mwangi, 2017).

Internal debts are those debt obligation of government owed to residents of the country. Meanwhile, domestic debt financing puts pressure on future generations and their ability to maintain economic and financial stability. They not only will have to pay the amount borrowed, but also cover the costs related to domestic debt financing, which includes interest and costs of debt management. Such a debt is sustainable if it is used to generate economic growth and benefits higher than initial costs, otherwise serious public finance issues are bound to appear (Kobey, 2016).

Conventional strategies for reducing the national domestic debt focus on some combination of reduced spending and policies promoting positive economic

performance, which can in turn increase government revenue. A sound economic performance is indicated by an increase in a country's physical output over a long period of time (Sani & Nwite, 2021). When an economy is performing well, the essentially benefits of such are: improved standard of living of citizens, higher real incomes and ability of government to devote more resources in provision of infrastructure like health education et cetera. Thus, capital accumulation and exogenous rate of change in population and technological progress are the major sources of growing economic performance. Based on the foregoing positions and the mixed observations by prior studies, the current study therefore examines debt management and economic performance while proposing that ***Domestic debt level does not significantly affect the gross domestic product performance in Nigeria (Hypothesis 1)***

2.1.1. External Debt Level and Economic development

External debt level refers to the amount of debt instrument issued by the federal government and denominated in foreign currency as money owed to foreign financial organizations. External debt level has become an issue with ever accumulation of budget deficits, over reliance on oil revenue, low productivity, low saving and high propensity to consume foreign goods and services (Khalil & Junaidu, 2019). The compounding issue of public debt accumulation in the country is so severe that quite apart from over reliance on oil revenue to the neglect of other revenue sources that could have been explored, the revenues from this only major source (oil) and indeed other revenue are susceptible to all manner of leakages that further weaken the economy and government had to borrow for developmental projects and programmes (Sani & Nwite, 2021).

External debt tends to improve total factor productivity through an increase in output which in turn could enhance Gross Domestic product (GDP) growth of a nation (Utomi, 2014). Huge external debt does not necessarily imply a slow economic growth; it is a nation's inability to meet its debt service payments fueled by inadequate knowledge on the nature, structure and magnitude of the debt in question (Were, 2011). Observations from these studies and several developed economies therefore propels the current study where the current study propose that ***External debt level does not significantly influence the gross domestic product of Nigeria (Hypothesis 2)***

2.2. Theoretical Framework

The study is anchored on Debt Overhang Theory which originates with two papers published in 1949 –

one by Hans Singer and another one by Raúl Prebisch. However, Matias (2004) stated that theory has its roots from the Marxian perspective in what was seen as a direct challenge of the market economic policies adopted in the post-war era which advocated a free market. The interaction between the developing and developed nations is captured by the theory. According to the theory, poor states are impoverished and rich ones enriched by the way poor states are integrated into the "world system" (Ndubuisi, 2017). Dependency theory postulates that the developed world perpetuated dependence through various means which did not end when independence was attained (Achwoga, 2016).

Thus, dependency increases as the developed and developing world continue to interact in the world market system because of how they are integrated into the system. Wealthy countries use their wealth to influence the adoption of policies that increase wealth of the developed nations at the expense of the developing nations. This causes a situation where capital moves to the developed nations, which forces the latter to seek larger loans which further indebts them further. It has been posited that this involves media control, politics, banking and finance, education (which translates to all aspects of human resource development) and sport (Onyele & Nwadike, 2021). Domination by the developed world has continued through the great influence of transnational companies. Proponents of the dependency theory argue that only through the delinking by the developing countries from the developed world would we have development seen in these countries. The wealthy nations counter attempts by dependent nations to resist influence and actively keep developing nations in a subservient position often through economic sanctions or by proscribing free trade policies attached to loans granted by the World Bank or International Monetary Fund.

The dependency theory is related to the present study since it explains the nature of the relationship between the countries of the world and the factors that have facilitated dependency of one group of countries on the other, by emphasizing how debts impact on economic performance (Onyele & Nwadike, 2021). This theory states that advanced countries use debt agreements to impose progressive arrangements that are non-compatible with economic requirements and aspirations of less developed countries indebted to them. However, the proper use of debt borrowed from developed economies can as well trigger economic growth and development in developing nations, especially if the borrowed funds are put to productive use. Lack of good economic

performance by developing nations such as Nigeria cannot be wholly blamed on developed economies on the basis of the postulations of dependency theory. Therefore, the study examines debt overhang theory to augment the above hypothesis.

2.3. Empirical Review

Hoti, Shkurti and Rehman (2022) examined the average impact of government debt on long-term GDP growth in four Western Balkan countries of Albania, Serbia, Macedonia, and Bosnia & Herzegovina over a 23-year period from 1997-2019. It explored the use of financing through debt on short- and long-term economic growth for these economies using a dynamic common correlated effects model with heterogeneous coefficients. The model's methodology estimation mimicked Chudik and Pesaran and the pooled mean group estimator was used. The conclusion of this study, with respect to the average impact of government debt on long-term GDP growth in the four Western Balkan countries, is consistent with the literature in that the study found that in the long-term, external debt does not contribute to long-term growth and, in fact, tends to have a negative impact.

Aiyedogbon, Zhuravka, Maxim, Olena and Olena (2022) examined the short- and long-run impact of state debt on economic growth in Nigeria. Time series data were sourced from Nigeria's statistical bulletins and annual reports, and it spanned the years from 1990 to 2020. The model was estimated using an autoregressive distributed lag (ARDL) bounds testing method to co-integration for the long-run investigation. The study found evidence of a long-term link between the study variables. In addition, the study discovered that all the explanatory are statistically significant. Specifically, economic growth is significant and negatively responsive to changes in external debt by 0.19% and debt servicing by 0.07%, contrary to its positive response to changes in domestic debt and exchange rate by 0.27% and 0.18%, respectively.

Manasseh, Abada, Okiche, Okanya, Nwakoby and Offu (2022) examined the impact of external debt on economic growth. The study utilized annual time series data, focusing on thirty selected Sub-Saharan African (SSA) countries for the period 1997 to 2020. The Dynamic System Generalised Method of Moments estimation technique was adopted while controlling for conventional sources of economic growth. Empirical findings from the study revealed that external debt and external debt volatility have a negative and significant impact on economic growth in SSA. Furthermore, the interaction of governance indicators, external debt and its volatility, had a

positive impact on economic growth in SSA. This study recommended that SSA government should endeavor to avoid excessive external debt to promote the regions' capacity to invest in her financial prospects, and to circumvent the danger of repayment of loans using her small income.

Yang, Zhang, Wang, Deng and Guo (2022) study the impact of government debt on economic growth and fluctuations in China. Based on panel data of 30 provinces in China from 2012 to 2019, the study used the Mann-Kendall method and Kernel Density estimation to analyze the temporal and spatial evolution of China's provincial government debt ratio and adopted a panel model and HP filtering method to study the impact of provincial government debt on economic growth and fluctuation. The findings indicate that, during the sample period, China's provincial government debt promoted economic growth and the regression coefficient (0.024) was significant. From different regional perspectives, the promotion effect of the central region (0.027) is higher than that of the eastern (0.020) and western regions (0.023). The study found a nonlinear relationship between China's provincial government debt and economic growth, showing an inverted "U-shaped" curve.

Onyele and Nwadike (2021) examined the impact of national debt burden on economic stability in Nigeria. Data spanning from 1981 to 2019 were collated from the World Development Indicators and Central Bank of Nigeria Statistical Bulletin, 2019 edition. Consequently, the variables used to measure debt burden are total debt-to-GDP ratio (debt overhang), short-term external debt-to-reserves ratio (reserve adequacy) and debt service cost-to-government revenue ratio (revenue adequacy) with exchange rate as a control variable, while economic stability is measured with real GDP growth rate. The Autoregressive Distributed Lag (ARDL) model was used for the analysis since the variables were stationary at both levels and first difference. The ARDL estimation showed that the explanatory variables collectively cause a diminishing impact on economic stability in the long run with revenue adequacy having a negative and significant impact. In the short run, all the components of debt burden, except debt overhang, have a negative and significant impact on economic stability. Under this circumstance, exchange rate has a positive and significant impact on economic stability in the long run.

Opara, Nzotta and Kanu (2021) investigated the effect of Nigeria's domestic public debt on economic development of Nigeria spanning from 1981-2018.

The secondary data used in the study were sourced from Central Bank of Nigeria Statistical Bulletin, Debt Management Office of Nigeria, World Bank Development Indicators and United Nations Development Program. The study made use of Ordinary Least Square Regression tools to determine the statistical relationship between Nigeria's domestic public debt profile and Human Development Index as well as private sector investment. The outcome of study in the first model showed that domestic debt servicing and state governments' domestic debts are significantly related to economic development. It was also shown that federal domestic debt and state domestic debt are significantly related to private sector investment. The study recommended that government should be cautious in her domestic borrowing policy given that servicing debt always becomes a burden to the sustainability of economic gains, in addition to its tendency of crowding-out private sector investment in Nigeria.

Edeminam (2021) ascertained the impact of public debt on economic growth in Nigeria using annual time series data from 1990 to 2019 collected from Central of Nigeria statistical bulletin. The variables were Real GDP, public debt, Inflation, debt to GDP ratio, debt servicing to GDP ratio, and exchange rate. Empirical analysis was conducted using Augmented Dickey Fuller unit root test to check for stationarity. Johansen Cointegration test was used to determine long run relationship and Vector Error Correction

Model to check for short run and long run impact of public debt on economic growth. Empirical results showed that the impact of public debt on economic growth was negative and significant in the long run. The impact of public debt on economic growth was negative but insignificant in the short run. In addition, the impact of ratio of debt servicing to GDP was significant and negative in the short and long run. There was no causality between public debt and economic growth.

The study recommends that public authorities in Nigeria should reduce reliance on public debt and instead move towards increasing revenues through diversification of the export base of the economy and expanding the tax net.

Abdulkarim and Saidatulakmal (2021) examined the effect of government debt on Nigeria's economic growth using annual data from 1980 to 2018 and the Autoregressive Distributed Lag technique. The empirical results showed that external debt constituted an impediment to long-term growth while its short-term effect was growth-enhancing. Domestic debt had a significant positive impact on long-term growth while its short-term effect was negative. In the long term and short term, debt service payments led to growth retardation confirming debt overhang effect. The findings suggested that the government should direct the borrowed funds to the diversification of the productive base of the economy.

2.4. Webometrics

S/N	Author(S)	Year	Topic	Time scope	Statistical Tools	Major Findings
1.	Hoti, Shkurti and Rehman	2022	Impact of government debt on GDP growth in Western Balkan countries	1997-2019	Dynamic common correlated effects model and Pooled mean group estimator	External debt has a negative impact on long-term growth
2.	Aiyedogbon, Zhuravka, Maxim, Olena and Olena	2022	Impact of state debt on economic growth in Nigeria	1990 – 2020	Autoregressive distributed lag (ARDL) bounds testing method	External debt and debt servicing negatively affect economic growth; domestic debt positively affects economic growth
3.	Manasseh, Abada, Okiche, Okanya, Nwakoby and Offu	2022	Impact of external debt on economic growth in Sub-Saharan Africa	1997 – 2020	Generalised Method of Moments estimation technique	External debt negatively affects economic growth
4.	Yang, Zhang, Wang, Deng and Guo	2022	Impact of government debt on economic growth and fluctuations in China	2012 – 2019	Mann–Kendall method and Kernel Density estimation	China's provincial government debt promoted economic growth significantly

5.	Onyele and Nwadike	2021	Impact of national debt burden on economic stability in Nigeria	1981 – 2019	Autoregressive Distributed Lag (ARDL) model	Debt burden, except debt overhang, have a negative and significant impact on economic stability
6.	Opara, Nzotta and Kanu	2021	Effect of Nigeria's domestic public debt on economic development of Nigeria	1981-2018	Ordinary Least Square Regression	Domestic debt servicing and state governments' domestic debts are significantly related to economic development
7.	Edeminam	2021	Impact of public debt on economic growth in Nigeria	1990 – 2019	ADF unit root test, Johansen Cointegration test and Vector Error Correction Model	Public debt negatively affect economic growth in the long run
8.	Abdulkarim and Saidatulakmal	2021	Effect of government debt on Nigeria's economic growth	1980 – 2018	Autoregressive Distributed Lag technique	External debt and debt service payments negatively affect long-term growth.

Source: Authors Compilation, 2023

3. Methodology

The present study adopted an ex-post-facto research design in order to determine the effect of debt level on the economic performance of Nigeria from 1999-2021. This research design is often deployed in a study that determines the association between variables and seeks to find out the factors that are associated with certain occurrence, conditions, events or behaviour by analyzing past events or already existing data for possible casual factors. Ex-post facto research design was therefore chosen for the conduct of the study because the events under study already took place in the past. The secondary data used for the study were collected from the Central Bank of Nigerian Statistical Bulletin. The variables on which data are collected include: external debt, domestic debt, debt servicing and gross domestic product (GDP).

The Ordinary Least Square (OLS) is used to analyze the time series data and estimate the parameters for the purpose of hypotheses testing. The Unit root test and Cointegration test are also employed as augmenting analysis since the data is time series data. Diagnostic test was also carried out in the study using Breusch-Godfrey Serial Correlation LM Test, Breusch-Pagan-Godfrey, Normality Test, Ramsey Reset Test and Variance Inflation Factors Analysis.

3.1. Model Specification

The study predicts Gross Domestic Products using debt servicing, external debt and domestic debt. The model for this analysis was adapted from the work of Muhammad and Abdullahi (2020) and modified thus:

$$GDP_t = \beta_0 + \beta_1 EDL_t + \beta_2 DDL_t + \varepsilon_t \text{-----eq (i)}$$

Where:

GDP = Gross Domestic Product

EDL = External Debt Level

DDL = Domestic Debt Level

t = year

β_{1-2} = parameter estimates of the predictors are zero

β_0 = the constant value of GDP when parameter estimates of the predictors are zero

3.2. Measurement of Variables

The measurement of the research variables are shown in Table 3.1 below:

Table 3.1 Description of Operational Variables

Variables	Type of Variable	Measurement	Source
Gross Domestic Product	Dependent	Natural Logarithm of total market value of goods and services at constant market price	Mwangi (2013)
External Debt Level	Independent	Stock of external debt to GDP ratio	Achwoga (2016)
Domestic Debt Level	Independent	Stock of domestic debt to GDP ratio	Achwoga (2016)

Source: Authors' compilation, 2023

3.3. Decision Rule

The inferential analytical tests in the study were carried out using 5% level of significance. It therefore implies that the null hypothesis is accepted if the *p-value* is greater than 0.05, while the alternate hypothesis is rejected. Otherwise, the null hypothesis is rejected while the alternate hypothesis is accepted.

4. RESULTS AND DISCUSSION OF FINDINGS

4.1. Descriptive Statistics

The descriptive statistical tools of mean, standard deviation, range values, skewness, kurtosis and Jarque-Bera probability were used to analyse the observed data. Table 4.1 shows the descriptive properties of the data.

Table 4.1 Descriptive Statistical Analysis

	GDP (₦'B)	Domestic Debt (₦'B)	External Debt (₦'B)
Mean	52140.20	6265.504	3878.456
Median	55469.35	4551.820	2695.070
Maximum	73382.77	19242.56	15855.23
Minimum	24215.78	794.8100	438.8900
Std. Dev.	17180.81	5606.516	4042.267
Skewness	-0.269972	0.815949	1.643098
Kurtosis	1.580926	2.471041	5.061514
Jarque-Bera	2.209254	2.820270	14.42189
Probability	0.331334	0.244110	0.000738
Sum	1199224.	144106.6	89204.49
Sum Sq. Dev.	6.49E+09	6.92E+08	3.59E+08
Observations	23	23	23

Source: Authors' Computation, E-views 10.

All the variables used in the study were measured in ₦'B in line with the Central Bank of Nigeria (CBN) statistical bulletin (2021). Thus, the descriptive analysis are based on ₦'B. Nigeria realised an average GDP of 52140.20 from 1999 to 2021, with a standard deviation of 17180.81. The lowest during the period in view was 24215.78 while the highest was 73382.77. Most of the values of GDP are below the mean since the skewness is negative. The distribution is platykurtic since the kurtosis is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.331334 is greater than 0.05, which means that the distribution of GDP is not different from a normal distribution.

Nigeria owed average domestic debts of 6265.504 from 1999 to 2021, with a standard deviation of 5606.516. The lowest domestic debt during the period was 794.8100 while the highest was 19242.56. More of the values of domestic debt are above the mean since the skewness is positive. The distribution is platykurtic since the kurtosis is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.244110 is greater than 0.05, which means that the distribution of domestic debt come from a normal distribution.

Furthermore, the mean external debt of Nigeria during the period in focus was 3878.456 with a standard deviation of 4042.267. The values ranged from 438.8900 to as high as 15855.23. More of the values of external debt are above the mean since the skewness is positive. The distribution is leptokurtic since the kurtosis is greater than 3, implying that the outliers are larger. The Jarque-Bera probability of 0.000738 is less than 0.05, which means that the distribution of external debt significantly deviated from a normal distribution.

4.2. Data Analysis

For the purpose of inferential analysis of data, GDP was transformed into natural logarithm; External Debt Level (EDL) was measured as stock of external debt to GDP ratio while Domestic Debt Level (DDL) was measured as stock of domestic debt to GDP ratio (Onyele & Nwadike, 2021; Achwoga, 2016).

4.2.1. Model Diagnostics

Diagnostic tests were computed to assess how well the linear model performed in estimating the parameters used in hypothesis testing. In the model diagnostics, Augmented Dickey-Fuller (ADF) test statistic, Johansen cointegration test, Breusch-Pagan-Godfrey, Breusch-Godfrey Serial Correlation LM Test, Jarque-Bera test, Ramsey RESET Test, and Variance Inflation Factors were used to test for unit root (stationarity), cointegration, heteroskedasticity, autocorrelation, normality, linearity and multicollinearity, respectively.

4.2.1.1. Unit Root Test

In order to obtain plausible numerical estimates of the parameters given, the data were subjected to unit root test using ADF test as shown in **Table 4.2**.

Table 4.2 Stationarity Test

Variable	ADF Test Statistic	5% Critical Value	Order of Integration
LogGDP	-4.122640	-3.004861	I(0)
Domestic Debt Level	-4.255482	-3.052169	I(2)
External Debt Level	-4.573555	-3.029970	I(2)

Source: Authors' Computation, Eviews 10.

The decision rule for stationarity is that the absolute value of the ADF Test Statistic must be greater than its 5% Critical Value. Therefore, the result of the ADF unit root test shows that except LogGDP which was stationary at I(0), other three variables (DDL and EDL) were non-stationary at levels. However, DDL and EDL attained stationarity at 2nd difference while DSL attained stationarity at 2nd difference.

4.2.1.2. Johansen cointegration test

Since the variables of the series did not attain stationarity at level, a test for cointegration is conducted to determine if the linear combinations of the stochastic trends in the series are cointegrated. The essence of this test for cointegration is to avoid spurious regression situations. Thus, if the linear combinations of the stochastic trends are I(0), the linear combinations cancels out the stochastic trends in the series. The cointegration result is given below in **Table 4.3**.

Table 4.3 Johansen cointegration test

Null Hypothesis	Trace Statistic	5% Critical Value	Max-Eigen Statistic	5% Critical Value
None *	104.1803	47.85613	51.43943	27.58434
At most 1 *	52.74086	29.79707	41.40978	21.13162
At most 2	11.33108	15.49471	11.23265	14.26460

Source: Authors' Computation, Eviews 10.

The Trace test and Max-Eigen value test indicates 2 cointegrating equations each. The trace statistic and the Max-Eigen statistic are greater than their respective critical values for all the cointegrating equations. Thus, the null hypothesis of no cointegrating equation was rejected at 5% significance level. This implies that even though the series of the variables were non-stationary at levels, their linear combinations are cointegrated. In other words, there exists a long run relationship among the variables at 5% significance level. Thus, the application of the OLS technique will yield informative and dependable results.

4.2.1.3. Heteroskedasticity Test

Heteroskedasticity was assed using B-P-G test to ascertain whether the residuals have a constant variance. The opposite of heteroskedasticity is homoscedasticity which refers to a situation where the variance of the residuals is equal over a range of measured values.

Table 4.4 Heteroskedasticity Test: Breusch-Pagan-Godfrey

F-statistic	8.200218	Prob. F(3,19)	0.0011
Obs*R-squared	12.97721	Prob. Chi-Square(3)	0.0047
Scaled explained SS	9.514589	Prob. Chi-Square(3)	0.0232

Source: Authors' Computation, Eviews 10.

The null hypothesis of the test is that the model is homoscedastic. However, the null hypothesis was rejected at 5% significance level, implying that the model suffered from heteroskedasticity.

4.2.1.4. Test for Autocorrelation

Autocorrelation refers to a condition whereby the residuals in a regression model have a strong association among themselves. This condition was examined in Table 4.5 below.

Table 4.5 Breusch-Godfrey Serial Correlation LM Test:

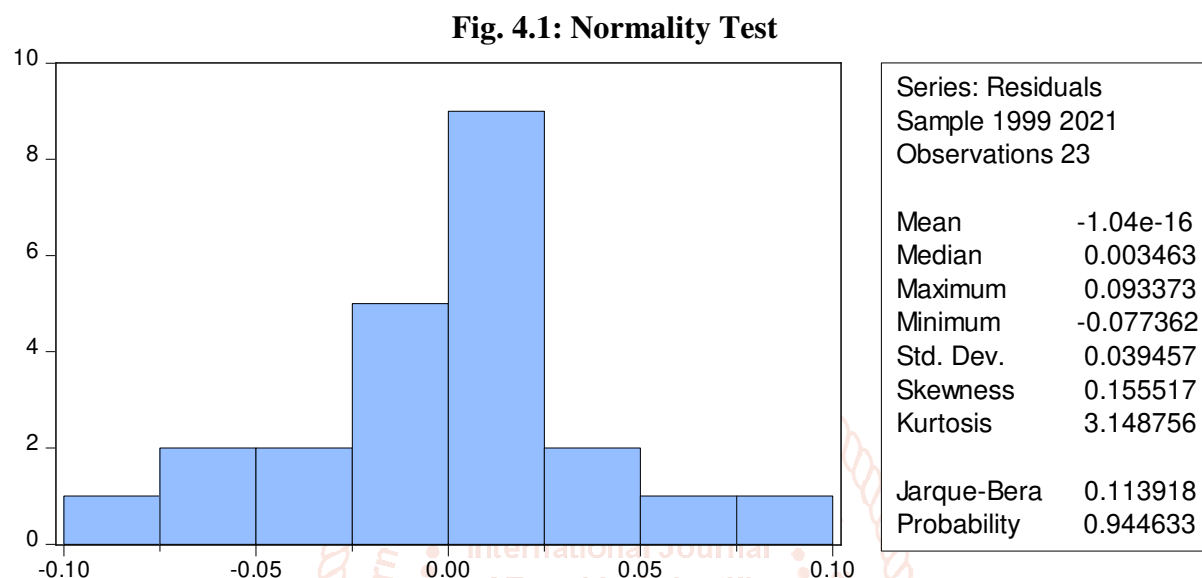
F-statistic	7.740931	Prob. F(2,17)	0.0041
Obs*R-squared	10.96251	Prob. Chi-Square(2)	0.0042

Source: Authors' Computation, Eviews 10.

The null hypothesis is that the residuals are not strongly correlated. However, the alternative hypothesis of auto correlated error terms was accepted since the Prob. F(2,17) = 0.0041 is less than 0.05.

4.2.1.5. Normality Test

The normality assumption in regression analysis requires that the error terms should not have outliers or extreme values. The assessment of this property was done using the probability of Jarque-Bera statistics (J-B stat) in Table 4.6.



Source: Authors' Computation, Eviews 10.

The null hypothesis is that the residuals do not strongly deviate from a normal deviation. Since the probability value of the J-B stat = 0.944633 is greater than 0.05, the null hypothesis of normality was accepted.

4.2.1.6. Linearity Test

The OLS regression model assumes that there is a linear relationship between the parameters of independent variables and the dependent variable. Ramsey RESET test was used in validating this assumption.

Table 4.6 Ramsey RESET Test

Equation: UNTITLED

Specification: LOGGDP C DDL EDL

Omitted Variables: Powers of fitted values from 1 to 2

	Value	df	Probability
F-statistic	1.015599	(2, 17)	0.3831
Likelihood ratio	2.595923	2	0.2731

Source: Authors' Computation, Eviews 10.

From the result in Table 4.7, the null hypothesis that there is a linear relationship between the variables was accepted since the Prob(F-stat) = 0.3831 is greater than 0.05. Thus, OLS model can be accurately deployed in explaining the effect of debt level on the economic performance of Nigeria.

4.2.1.7. Multicollinearity Test

Multicollinearity is a condition in which the independent variables are highly correlated such that the effects of the independents on the outcome variable cannot be separated. It reduces the validity of the regression estimates since the independent variables become extremely the same when there is a strong collinearity in the predictors. Multicollinearity practically inflates unnecessarily the standard errors of the coefficients. By overinflating the standard errors, multicollinearity makes some variables statistically insignificant when they should be significant. To assess the strength of the collinearity subsisting among the predictors, the study deployed Variance Inflation Factors as shown in Table 4.8.

Table 4.7 Variance Inflation Factors

Date: 05/05/23 Time: 07:59

Sample: 1999 2021

Included observations: 23

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	0.000314	4.000552	NA
DDL	0.080445	15.22433	4.807144
EDL	0.025845	3.101247	1.213311

Source: Authors' Computation, Eviews 10.

The recommended practice in VIF analysis is that a centered VIF greater than or equal to 10 is considered highly collinear (Tamura, Kobayashi, Takano, Miyashiro, Nakata & Matsui, 2019). Thus, the explanatory variables are considered free from multicollinearity issues. In general, the regression model performed well out of the seven diagnostic assessments, although not excellent since it failed to meet two assumptions: heteroskedasticity and autocorrelation. However, the researcher still applied OLS model as Frost (2019) observed that the presence of autocorrelation and heteroskedasticity does not lead to biased regression estimates although it reduces OLS precision.

4.2.2. Hypotheses Testing

The Ordinary Least Square (OLS) was used to analyze the time series data and estimate the parameters for the purpose of hypotheses testing. The model estimated is stated below:

$$GDP_t = \beta_0 + \beta_1 EDL_t + \beta_2 DDL_t + \varepsilon_t$$

The result of the OLS estimation is presented in **Table 4.9** below.

Table 4.8 Ordinary Least Square Regression Estimates

Dependent Variable: LOGGDP

Method: Least Squares

Date: 05/5/23 Time: 07:56

Sample: 1999 2021

Included observations: 23

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4.565246	0.017708	257.8133	0.0000
DDL	2.784464	0.283629	9.817274	0.0000
EDL	-1.340768	0.160763	-8.340029	0.0000
R-squared	0.940193	Mean dependent var		4.690768
Adjusted R-squared	0.930750	S.D. dependent var		0.161344
S.E. of regression	0.042458	Akaike info criterion		-3.323817
Sum squared resid	0.034251	Schwarz criterion		-3.126339
Log likelihood	42.22389	Hannan-Quinn criter.		-3.274152
F-statistic	99.56311	Durbin-Watson stat		0.736375
Prob(F-statistic)	0.000000			

Source: Authors' Computation, Eviews 10.

The output of the OLS estimation ascertained the effect of debt level (proxies by DDL and EDL, and DSL) on the economic performance of Nigeria. R-squared = 0.940193 shows that about 94.02% variations in the Gross Domestic Product of Nigeria are accounted for by the systematic changes in Domestic Debt Level and External Debt Level. The model's goodness-of-fit is high since the Adjusted R-squared = 0.930750 is greater than 0.50. In addition, the statistical significance of the model was supported by the F-statistic = 99.56311 of which Prob(F-statistic) = 0.000000 is less than 0.05. The conclusion is therefore that the model predicting GDP using Domestic Debt Level and External Debt Level is informative and useful. Therefore, the researcher proceeds to use the regression coefficients and *p*-values to test the individual hypotheses.

4.2.2.1. Test of Hypothesis One

H_{01} : Domestic debt level does not significantly affect the gross domestic product performance in Nigeria.

Domestic Debt Level (DDL) has a positive coefficient of 2.784464 and a corresponding p -value of 0.0000. These imply that an increase in DDL by a margin will result in a significant increase in GDP performance of Nigeria by 2.784464.

Decision: The null hypothesis was rejected in favour of the alternate hypothesis since the p -value = 0.000 is less than 0.05. In conclusion, domestic debt level significantly and positively affects the gross domestic product performance in Nigeria ($\beta_1 = 2.784464$, p -value = 0.000).

4.2.2.2. Test of Hypothesis II

H_{02} : External debt level does not significantly influence the gross domestic product of Nigeria.

External Debt Level (EDL) has a negative coefficient of -1.340768 and a corresponding p -value of 0.0000. These imply that an increase in EDL by a margin will result in a significant decrease in GDP performance of Nigeria by 1.340768.

Decision: The null hypothesis was rejected in favour of the alternate hypothesis since the p -value = 0.000 is less than 0.05. In conclusion, external debt level significantly but negatively influences the gross domestic product of Nigeria ($\beta_2 = -1.340768$, p -value = 0.000).

4.3. Discussion of Findings

The testing of the first hypothesis showed that domestic debt level significantly and positively affects the gross domestic product performance in Nigeria ($\beta_1 = 2.784464$, p -value = 0.000). Thus, a significant positive association exists between domestic debt level and GDP performance. This relationship is based on the fact that money borrowed by the government from internal sources are also re-invested back into the economy when they are finally re-paid or serviced. This finding of a significant positive relationship was also found by Aiyedogbon, Zhuravka, Maxim, Olena and Olena (2022); Egede, Aminu and Oluwole (2021); Eke and Akujuobi (2021); and Alagba and Eferakeya (2019).

In the test of the second hypothesis, it was shown that external debt level significantly and negatively influences the gross domestic product of Nigeria ($\beta_2 = -1.340768$, p -value = 0.000). Thus, external debt is negatively and expressively associated with GDP performance of Nigeria. External debt negatively affects GDP performance through the debt overhang effect which is a situation when an accumulated debt discourages and overhang investment. This finding

agrees with those of Hoti, Shkurti and Rehman (2022); Aiyedogbon, Zhuravka, Maxim, Olena and Olena (2022); Manasseh, Abada, Okiche, Okanya, Nwakoby and Offu (2022); Abdulkarim and Saidatulakmal (2021); Egede, Aminu and Oluwole (2021); Eke and Akujuobi (2021); Alagba and Eferakeya (2019). However, the study by Ndubuisi (2017); Iya, Gabdo and Aminu (2013); and Sulaiman and Azeez (2012) found that external debt stock positively enhances Nigeria's growth and development index.

5. Conclusion and Recommendations

Government opts for debt financing in order to close the resource gap between savings and investment. However, public debt level become productive only when they are used to create assets which yield income sufficient to pay the principal and interest on the loan. Increases in public debt aims at stimulating economic growth because government borrow to finance investment and infrastructural projects that help provide the fundamental basis for further economic production and growth. Debts become a burden when debt overhang is rising, and the foreign reserve become inadequate to cover short-term external debt and government revenue is also inadequate for debt servicing. Worthy of note is that while internal borrowing can easily be repaid through increase in taxes or printing of more local currency, external borrowings create more problems and are difficult to repay due to harsh conditions of lenders and debtor country would have to struggle to export goods and services to earn foreign exchange to repay. This is the major reason why the OLS regression output showed that domestic debt level positively affects GDP performance while the effects of external debt level on GDP performance is negative. In line with the findings of the study, the researcher recommends the following:

1. The government should resort to domestic debts up to sustainable debt levels that do not crowd out development and social programmes.
2. To prevent issues with debt overhang, government borrowing from international markets should be utilized effectively and concessionary loans rather than commercial loans should be sought after.

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